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(51) INT CL⁶

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(52) UK CL (Edition Q)

H4K KBHX KOD4

(56) Documents Cited

EP 0795984 A2 EP 0677938 A1 WO 95/21488 A1
US 4546212 A

(58) Field of Search

UK CL (Edition Q) H4K KBHX KOD4
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ONLINE : WPI

(54) Abstract Title

ADSL splitter

(57) A PSTN (Public Switched Telephone Network) connection device having a splitter 200 for an ADSL (Asymmetric Digital Subscriber Line) transmission system. The PSTN connection device includes a telephone connecting device having a built-in telephone terminal splitter for connecting the telephone terminal to the PSTN, and an ATU-R (ADSL Transmission Unit at the Customer Promises End) connecting device having a built-in ATU-R splitter for connecting the ATU-R to the PSTN. The telephone connecting device is a telephone jack or telephone socket, and the ATU-R connecting device is an ATU-R jack or ATU-R socket. Therefore, the PSTN connection device is easy to install and reduces the installation cost.

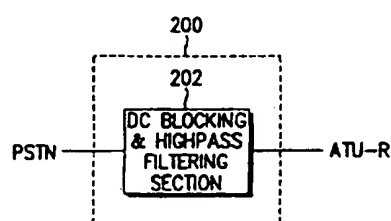


FIG. 2

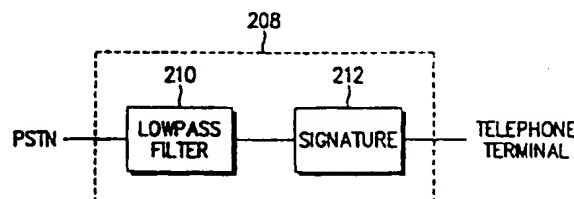
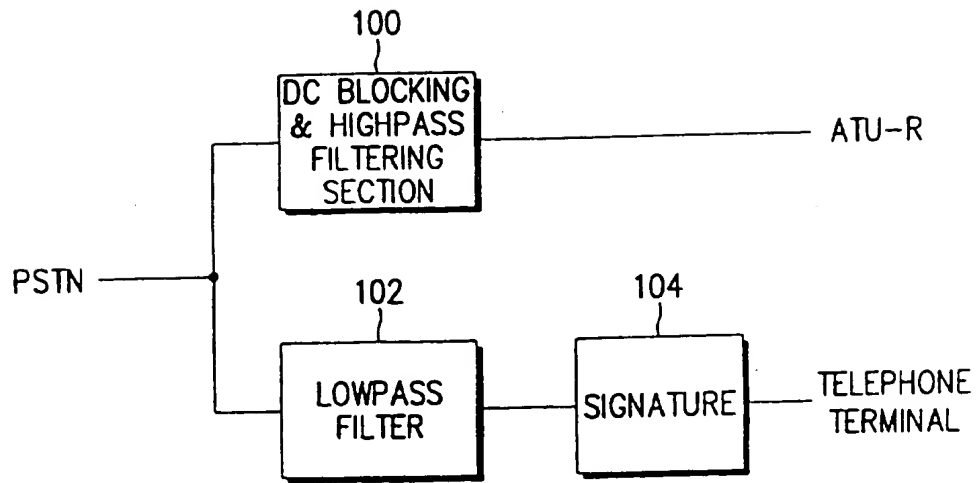


FIG. 5

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(PRIOR ART)
FIG. 1

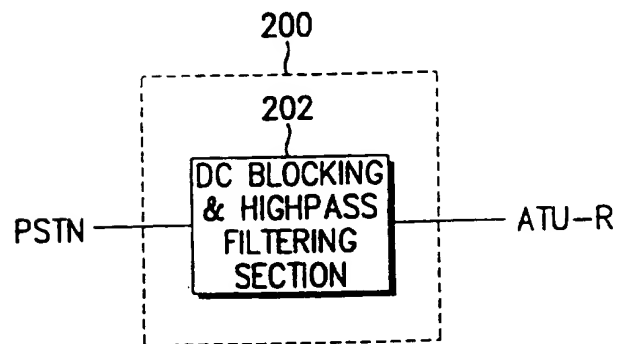


FIG. 2

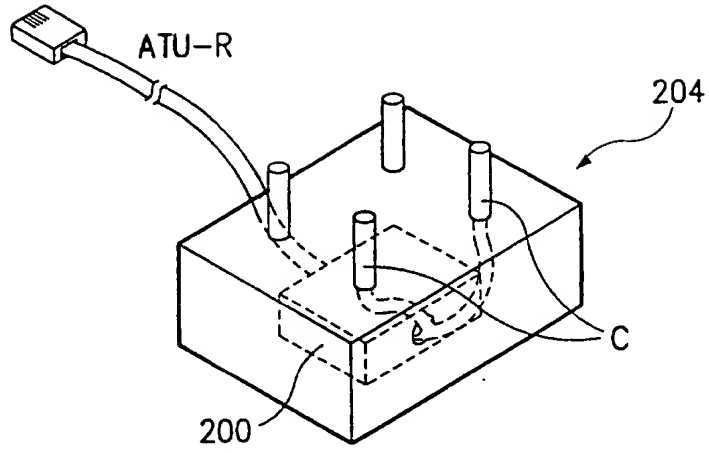


FIG. 3

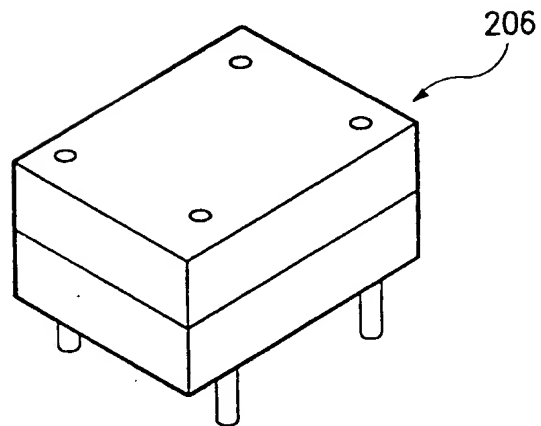


FIG. 4

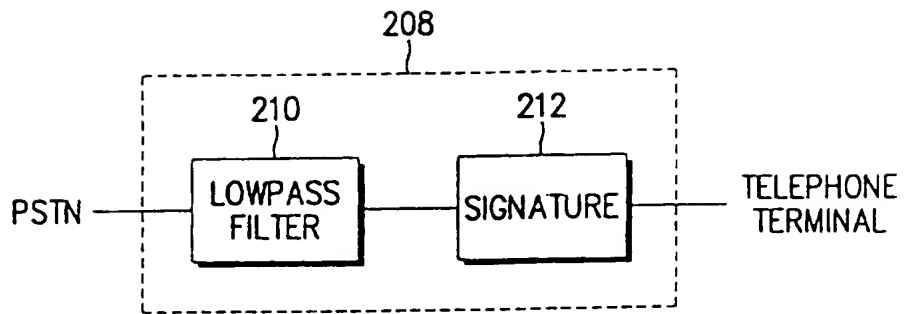


FIG. 5

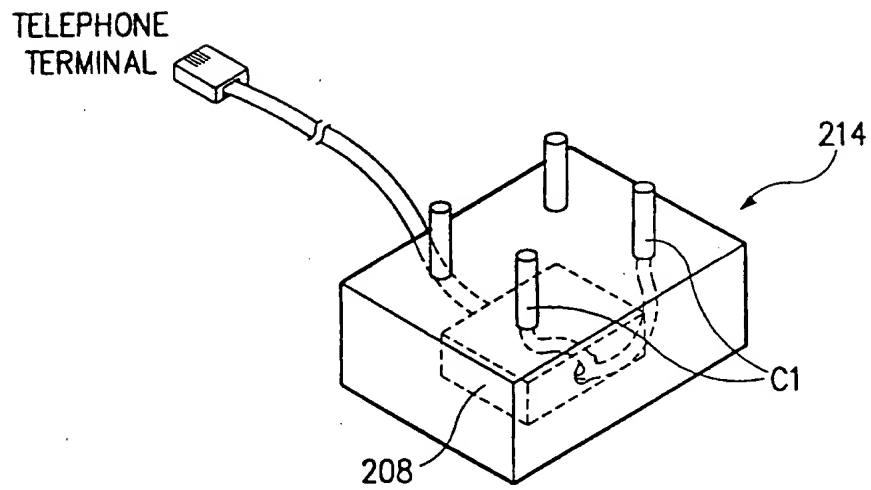


FIG. 6

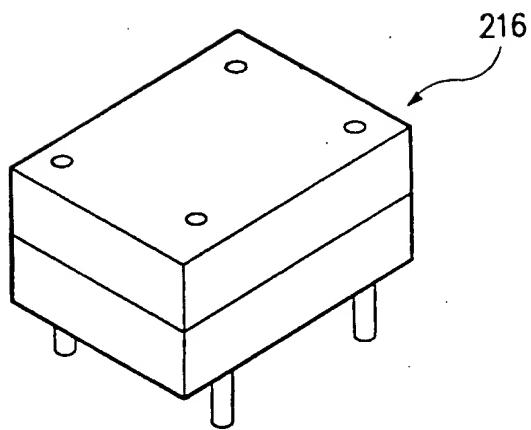


FIG. 7

- 1 -

PSTN CONNECTION DEVICE WITH SPLITTER FOR ASYMMETRIC
DIGITAL SUBSCRIBER LINE TRANSMISSION SYSTEM

5 The present invention relates to an asymmetric digital subscriber line (ADSL) transmission system, and in particular, to a PSTN (Public Switched Telephone Network) connection device with a splitter for use in an ADSL transmission system.

10 An ADSL transmission system transmits/receives data at the high frequency band and a voice signal for the telephone service at the low frequency band using the existing telephone line (i.e., the PSTN), in order to transmit/receive the data at high speed without hindering
15 the telephone service. Accordingly, a subscriber party of the ADSL transmission system uses a splitter for splitting the high frequency signals and the low frequency signals from the signals transmitted through the telephone line, to provide the high frequency signals to a subscriber
20 terminal of the ADSL transmission system and the low frequency signals to a telephone terminal for the telephone service.

25 Figure 1 shows a known structure of the splitter, in which the PSTN is connected in common to a DC (Direct Current) blocking and highpass filtering section 100 and a lowpass filter 102. The DC blocking and highpass filtering section 100 blocks a DC component of the signal received from the PSTN and highpass-filters the DC blocked
30 signal, and provides its output signal to an ATU-R (ADSL Transmission Unit at the Customer Promises End) which is the subscriber terminal of the ADSL transmission system. The lowpass filter 102 lowpass-filters the signal received from the PSTN, and provides the lowpass-filtered signal to
35 the telephone terminal via a signature 104. The signature

104 forms a loop for AD/DC signalling and provides the telephone terminal with a ring signal. Here, the telephone terminal connected to the ADSL transmission system should be provided with the signal from the PSTN which is lowpass
5 filtered, in order to provide the telephone service.

In general, a residential building has a plurality of telephones separately installed, for example, in a bedroom and a living room; for that purpose, a plurality of
10 telephone sockets are molded (buried) in the wall during construction of the residential building. Accordingly, in case a user is provided with a data service through the ADSL transmission system, all the telephones installed in the building should have the splitters installed
15 separately or a telephone connection terminal of the splitter, to be connected the telephone terminal, should be connected to all the telephones in the building, in order to provide a normal telephone service through the telephone terminals. Connecting one telephone connection
20 terminal of the splitter to all the telephones in the building makes the installed telephone sockets useless, and needs additional wiring for the telephone terminals, which is annoying and incurs an extra cost for the additional wiring.

25

It is therefore an aim of preferred embodiments of the present invention to provide a PSTN connection device with a splitter for ADSL transmission system, which is easy to install and reduces the installation cost.

30

According to a first aspect of the present invention, there is provided a PSTN (Public Switched Telephone Network) connection device having a splitter for an asymmetric digital subscriber line (ADSL) transmission
35 system, comprising: a PSTN; a telephone terminal; an ATU-R

(ADSL Transmission Unit at the Customer Promises End); a telephone connecting device having a telephone terminal splitter, for connecting said telephone terminal to said PSTN; and an ATU-R connecting device having an ATU-R splitter, for connecting said ATU-R to said PSTN.

According to a second aspect of the present invention, there is provided a PSTN connection device having a splitter for connecting a PSTN to a telephone terminal, comprising: a socket connected to said PSTN; and a jack for connecting said socket to the telephone terminal, lowpass-filtering a signal from the PSTN, and performing signature.

According to a third aspect of the present invention, there is provided a PSTN connection device having a splitter for connecting a PSTN to a telephone terminal, comprising: a socket connected to said PSTN, for lowpass-filtering a signal from the PSTN and performing signature; and a jack for connecting said socket to the telephone terminal.

According to a fourth aspect of the present invention, there is provided a PSTN connection device having a splitter for connecting a PSTN to an ATU-R, comprising: a socket connected to said PSTN; and a jack for connecting said socket to the ATU-R, blocking a DC component of a signal from the PSTN, and highpass-filtering the DC blocked signal.

According to a fifth aspect of the present invention, there is provided a PSTN connection device having a splitter for connecting a PSTN to an ATU-R, comprising: a socket connected to said PSTN, for blocking a DC component of a signal from the PSTN and highpass-filtering the DC

blocked signal; and a jack for connecting said socket to the ATU-R.

5 For a better understanding of the invention, and to show how embodiments of the same may be carried into effect, reference will now be made, by way of example, to the accompanying diagrammatic drawings, in which:

10 Figure 1 is a block diagram of a splitter according to the prior art;

Figure 2 is a block diagram of a splitter for ATU-R according to a preferred embodiment of the present invention;

15 Figure 3 is a schematic diagram illustrating a jack having a built-in splitter for ATU-R shown in Figure 2;

20 Figure 4 is a perspective view of a socket having a built-in splitter for ATU-R shown in Figure 2;

Figure 5 is a block diagram of a splitter for a telephone terminal according to a preferred embodiment of the present invention;

25 Figure 6 is a schematic diagram illustrating a jack having a built-in splitter for the telephone terminal shown in Figure 5; and

30 Figure 7 is a perspective view of a socket having a built-in splitter for the telephone terminal shown in Figure 5.

35 A preferred embodiment of the present invention will be described in detail referring to the attached drawings,

in which the like reference numerals denote the same elements in the drawings, for understanding. Though the specific embodiment will be exemplarily defined and described in detail to clarify the subject matter of the present invention, the present invention may be implemented with the description of the present invention by those skilled in the art even without the details. In addition, an unnecessary detailed description of widely known functions and constructions may be avoided here.

10

Figure 2 shows a block diagram of an ATU-R splitter 200 according to a preferred embodiment of the present invention. The ATU-R splitter 200 is comprised of a DC blocking and highpass filtering section 202 for blocking the DC component of the signal received from the PSTN and highpass-filtering the DC blocked signal. The highpass-filtered signal is provided to the ATU-R.

The ATU-R splitter 200 can be built into a jack 204, as shown in Figure 3. In case the jack 204 is connected to an ordinary socket coupled to the PSTN, the PSTN is connected to connection terminals C and the connection terminals C are connected to the ATU-R via the ATU-R splitter 200. Therefore, the signal from the PSTN is processed by the ATU-R splitter 200 and then, provided to the ATU-R.

Alternatively, the ATU-R splitter 200 can be built into a socket 206 shown in Figure 4. In this case, terminals prepared at a lower portion of the socket 206 having the built-in ATU-R splitter 200 can be inserted in the ordinary socket connected to the PSTN, and an ordinary jack connected to the ATU-R can be inserted in holes prepared on the upper portion thereof. Accordingly, the signal from the PSTN is processed by the ATU-R splitter

35

200 built into the socket 206 and then, provided to the ATU-R.

5 Figure 5 shows a block diagram of a telephone
terminal splitter 208 according to a preferred embodiment
of the present invention. The telephone terminal splitter
208 includes a lowpass filter 210 and a signature 212, and
the signal from the PSTN is lowpass-filtered by the
lowpass filter 210 and then, provided to the telephone
10 terminal via the signature 212. The signature 212 provides
various tones to the telephone terminal.

 The telephone terminal splitter 208 can be built into
a jack 214, as shown in Figure 6. In case the jack 214 is
15 connected to the ordinary socket coupled to the PSTN, the
PSTN is connected to connection terminals C1 and the
connection terminals C1 are connected to the telephone
terminal via the telephone terminal splitter 208.
Therefore, the signal from the PSTN is processed by the
20 telephone terminal splitter 208 and then, provided to the
telephone terminal.

 Alternatively, the telephone terminal splitter 208
can be built into a socket 216 shown in Figure 7. In this
25 case, terminals prepared at a lower portion of the socket
216 having the built-in telephone terminal splitter 208
can be inserted in the ordinary socket connected to the
PSTN, and an ordinary jack of the telephone terminal can
be inserted in holes prepared on the upper portion
30 thereof. Accordingly, the signal from the PSTN is
processed by the telephone terminal splitter 208 built
into the socket 216 and then, provided to the telephone
terminal.

As described above, the PSTN connection devices of the invention have the telephone terminal splitter or the ATU-R splitter separately, and the telephone terminal splitter is built into the jack or socket connected to the telephone terminal, so that the signal from the PSTN is processed by the telephone terminal splitter and then, provided to the telephone terminal. Moreover, the ATU-R splitter is built into the jack or socket connected to the ATU-R, so that the signal from the PSTN is processed by the ATU-R splitter and then, provided to the ATU-R. Accordingly, it is possible to freely change the position of the telephone terminals and the ATU-R, while maintaining the existing wiring for connecting the PSTN to the telephone terminals in the residential building.

The telephone terminal splitter and the ATU-R splitter can be built into the jack and socket in the same shape. Therefore, for the sake of convenience, the jack and socket having the built-in telephone terminal splitter have different colors from those of the jack and socket having the built-in ATU-R splitter. Moreover, a mark indicating the type of the built-in splitter can be made on the outside of the respective jacks and sockets.

Although illustrative embodiments of the present invention have been described herein with reference to the accompanying drawings, it is to be understood that the invention is not limited to those precise embodiments, and that various other changes and modifications may be affected therein by one skilled in the art without departing from the scope of the invention.

The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and

which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

5 All of the features disclosed in this specification
(including any accompanying claims, abstract and
drawings), and/or all of the steps of any method or
process so disclosed, may be combined in any combination,
except combinations where at least some of such features
10 and/or steps are mutually exclusive.

Each feature disclosed in this specification
(including any accompanying claims, abstract and
drawings), may be replaced by alternative features serving
15 the same, equivalent or similar purpose, unless expressly
stated otherwise. Thus, unless expressly stated
otherwise, each feature disclosed is one example only of
a generic series of equivalent or similar features.

20 The invention is not restricted to the details of the
foregoing embodiment(s). The invention extends to any
novel one, or any novel combination, of the features
disclosed in this specification (including any
accompanying claims, abstract and drawings), or to any
25 novel one, or any novel combination, of the steps of any
method or process so disclosed.

CLAIMS

1. A PSTN (Public Switched Telephone Network) connection device having a splitter for an asymmetric digital subscriber line (ADSL) transmission system, comprising:

5

a PSTN;

a telephone terminal;

10 an ATU-R (ADSL Transmission Unit at the Customer Promises End);

a telephone connecting device having a telephone terminal splitter, for connecting said telephone terminal to said PSTN; and
15

an ATU-R connecting device having an ATU-R splitter, for connecting said ATU-R to said PSTN.

20 2. A PSTN connection device having a splitter for connecting a PSTN to a telephone terminal, comprising:

a socket connected to said PSTN; and

25 a jack for connecting said socket to the telephone terminal, lowpass-filtering a signal from the PSTN, and performing signature.

30 3. A PSTN connection device having a splitter for connecting a PSTN to a telephone terminal, comprising:

a socket connected to said PSTN, for lowpass-filtering a signal from the PSTN and performing signature; and

35

a jack for connecting said socket to the telephone terminal.

4. A PSTN connection device having a splitter for
5 connecting a PSTN to an ATU-R, comprising:

a socket connected to said PSTN; and

10 a jack for connecting said socket to the ATU-R,
blocking a DC component of a signal from the PSTN, and
highpass-filtering the DC blocked signal.

5. A PSTN connection device having a splitter for
connecting a PSTN to an ATU-R, comprising:

15

a socket connected to said PSTN, for blocking a DC
component of a signal from the PSTN and highpass-filtering
the DC blocked signal; and

20 a jack for connecting said socket to the ATU-R.

6. A PSTN connection device having a splitter for an
asymmetric digital subscriber line transmission system,
the device being substantially as herein described with
25 reference to Figures 2 to 7.



Application No: GB 9815435.4
Claims searched: 1,4 and 5

Examiner: Ken Long
Date of search: 4 January 1999

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): H4K (KOD4 & KBHX)

Int Cl (Ed.6): H04M (11/06)
H04L (5/06)
H04J (1/10)

Other: ONLINE : WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	EP 0795984 A2 MOTOROLA (column 5 lines 31-57)	1, 4 & 5
X	EP 0677938 A1 BELL (column 1 lines 1-29)	1, 4 & 5
X	WO 95/21488 A1 BT (page 4 lines 12-19)	1, 4 & 5
X	US 4546212 CROWDER (column 1 line 48 to column 2 line 7)	1, 4 & 5

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

No English title available.

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Applicant(s): SAMSUNG ELECTRONICS CO LTD (KR)
Requested Patent: ■ JP11205467
Application Number: DE19981031779 19980715
Priority Number(s): KR19970074151 19971226
IPC Classification: H04M11/00
EC Classification: H04L5/06, H04M11/06B
Equivalents: CN1221278, ■ GB2332813, KR251943

Abstract

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